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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/051,562	01/18/2002	Kevin K. Chan	YO998-426DIV	9978

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EXAMINER

NOVACEK, CHRISTY L

ART UNIT

PAPER NUMBER

2822

DATE MAILED: 11/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/051,562

Applicant(s)

CHAN ET AL.

Examiner

Christy L. Novacek

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18-23,25-35,37 and 38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 18-22,25-29 and 34 is/are allowed.
- 6) ☒ Claim(s) 23,30-33,35,37 and 38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is in response to the amendment filed September 23, 2003 and the request for continued examination filed October 16, 2003.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on September 23, 2003 has been entered.

Response to Amendment

The limitations added to claims 18 and 34 are sufficient to overcome the Taur et al. (US 5,646,058) and Goto (JP 05-226655) references. Therefore, the rejections of claims 18-21, 23, and 34 under 35 U.S.C. 103(a) are hereby withdrawn.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 23, 35, 37 and 38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 23 recites the limitation "said lower insulator layer" in line 2 of the claim. There is insufficient antecedent basis for this limitation in the claim.

Claim 35 recites the limitation "said upper insulator layer" in line 4 of the claim. There is insufficient antecedent basis for this limitation in the claim.

Claim 37 recites the limitation "said lower insulator layer" in line 2 of the claim. There is insufficient antecedent basis for this limitation in the claim.

Claim 38 recites the limitation "said spacer" in line 13 of the claim. Previously, line 9 of the claim recites "an upper spacer" and line 11 recites "a lower spacer". Therefore, the limitation of "said spacer" is unclear because it is ambiguous as to which spacer (upper or lower) this limitation refers.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 30 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Taur et al. (US 5,646,058).

Regarding claim 30, Taur discloses a single crystal silicon channel layer (22a/22b), doped epitaxial silicon drain and source regions (24a/24b/24c) connected to the channel layer, a gate insulating layer (26/20) covering the channel layer and the doped drain and source regions, a double-gate conductor on the insulating layer wherein the double-gate conductor includes a first conductor (30) on a first side of the channel layer and a second conductor (34) on a second side

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of the channel layer, and a spacer (20a/20b/20c) between the double-gate conductor and the drain and source regions (Fig. 1D/2; col. 2, ln. 54-col. 3, ln. 59). The thickness of the gate insulating layer (26/20) is independent of the thickness of the spacer (20a/20b/20c) (Fig. 1D/2; col. 2, ln. 54-col. 3, ln. 59).

Regarding claim 31, Taur discloses that the first and second conductors are self-aligned by the doped drain and source regions and the gate insulating layer (col. 3, ln. 50-57).

Claim Rejections - 35 USC § 102/103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 32, 33 and 35 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Taur et al. (US 5,646,058).

Regarding claims 32 and 35, Taur does not disclose that the source/drain regions are grown from the channel layer. However, Taur does disclose the product of having single-crystal epitaxial silicon source/drain regions (col. 3, ln. 13-21; col. 3, ln. 38-40). “[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Regarding claim 33, Taur discloses that the epitaxially grown silicon includes silicon (col. 3, ln. 13-21; col. 3, ln. 38-40).

Allowable Subject Matter

Claims 18-22, 25-29 and 34 are allowed.

The primary reason for the allowance of claims 22, 25-29 and 34 was stated in the office action mailed July 23, 2003.

The primary reason for the allowance of claims 18-21 is the inclusion therein, in combination as currently claimed, of the limitation of forming a gate insulating layer covering the channel layer and source and drain regions and also forming upper and lower spacers between the double-gate conductor and the source and drain regions such that the thickness of the gate insulating layer is independent of the thickness of the upper and lower spacers. This limitation is found in claims 18-21 and is neither disclosed nor taught by the prior art of record, alone or in combination.

Response to Arguments

Applicant's arguments filed September 23, 2003 have been fully considered but they are not persuasive with respect to claims 30-33 and 35. With respect to claims 30-33 and 35, Applicant argues that Taur fails to disclose the limitation of forming a spacer between the gate and the source/drain regions. This is incorrect in so far as the oxide layers 20a/20b/20c meet the limitation of "a spacer" located between the gate and the source/drain regions.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christy L. Novacek whose telephone number is (703) 308-5840. The examiner can normally be reached on Monday-Thursday and alternate Fridays 7:30 - 5:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on (703) 308-4905. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

CLN
October 28, 2003



AMIR ZARABIAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800